



Arizona Lead & Pesticide Poisoning

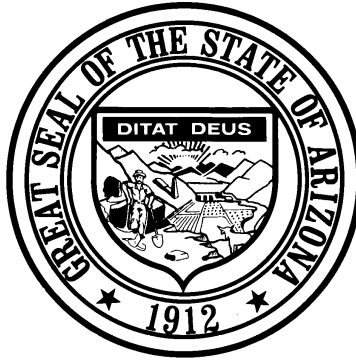
Annual Report 2000



Arizona Department of Health Services
Bureau of Epidemiology and Disease Control Services
Office of Environmental Health

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State of Arizona

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Executive Summary

The Arizona Department of Health Services Lead and Pesticide Poisoning Prevention Program maintains the lead and pesticide exposure registries for Arizona. The program staff develop lead and pesticide poisoning prevention programs, investigate cases with elevated blood lead levels, and conduct educational outreach activities. The following items highlight program activities and findings in 2000:

- Laboratories and health care providers reported 223 children with lead poisoning in 2000. Lead poisoning in children is defined as blood lead levels equal to or greater than 10 micrograms of lead per deciliter of blood (≥ 10 ug/dL). Seventy-nine percent (79%) of the childhood cases (176 cases) were in the lower ranges of lead poisoning, 10 to <20 ug/dL. The remaining 47 cases (21%) were in the moderate to severe range of lead poisoning (≥ 20 ug/dL).
- The program contacted 90% of the lead poisoning cases' families by phone, mail, or in-person and provided lead poisoning prevention advice and educational materials. Cases that could not be contacted by any means were referred back to the medical provider and to their health plan.
- The program updated the lead poisoning reporting requirements for laboratories and physicians in December 2000. Laboratories are now required to report all blood lead test results. Physicians are required to report elevated blood lead levels (≥ 10 ug/dL for children; ≥ 25 ug/dL for adults). These data will provide screening information that will help characterize lead poisoning trends statewide.
- Arizona physicians reported 247 adult cases with blood lead levels ≥ 10 ug/dL in 2000. Fifty-four (22%) of these cases were ≥ 25 ug/dL. The program has identified 110 specific industries with a high risk of lead exposure. Industry education forums were conducted to help high-risk industries to identify risk factors and implement prevention activities.
- The program identified a total of 18 definite, probable, and possible pesticide poisonings in 2000. The majority of poisonings were from structural pest control applications. The organophosphate pesticides accounted for 60% of the exposure application events and were the most commonly used pesticides. Staff performed investigations of all suspected pesticide poisoning cases. The program recorded and analyzed the information, and worked with the Structural Pest Control Commission and the Arizona Department of Agriculture on prevention activities.

1.0 Lead and Pesticide Surveillance Program Activities

The Arizona Department of Health Services Lead and Pesticide Poisoning Prevention Program develops local lead poisoning prevention programs, maintains the statewide registry for recording cases with elevated blood lead levels, and conducts educational outreach activities. The program maintains a statewide lead poisoning registry for children and adults with blood lead levels greater than or equal to 10 ug/dL. The program provides case follow-up including environmental investigations, home visits, and physician assistance.

The program also administers a pesticide poisoning surveillance and prevention program to identify factors associated with pesticide-related illnesses. Staff address health concerns by providing consultations and informational literature on pesticides and their potential effect on human health.

2.0 Childhood Lead Poisoning

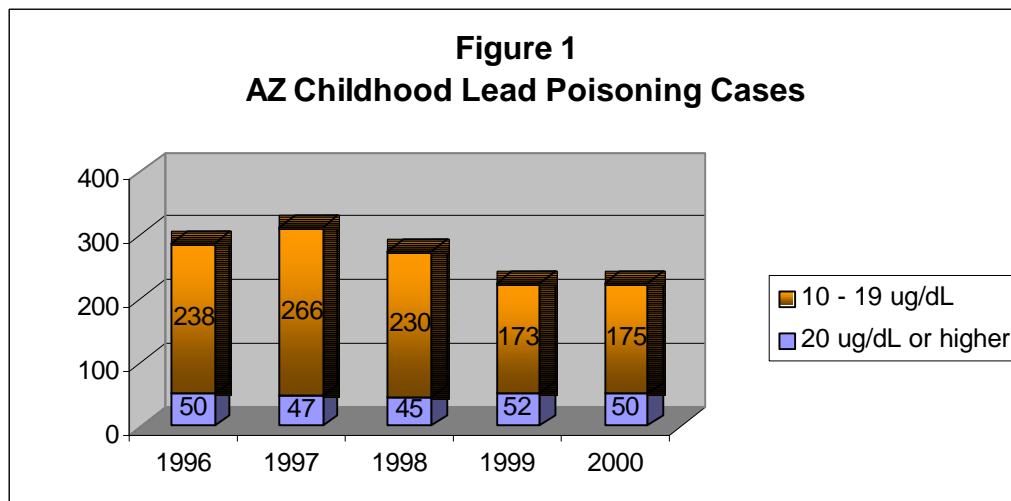
Childhood lead poisoning is a significant environmental health problem, yet it is entirely preventable. Lead poisoning prevents children from reaching their full potential. Children ages six years old and younger are particularly susceptible to lead poisoning. Minority children, poor children, and those living in older housing are at higher risk. Lead exposure prevention is key to ensure declining blood lead levels. Ingestion of lead, through hand-to-mouth behavior, is the primary pathway of exposure.

The childhood lead poisoning prevention program provides childhood case follow-up that meets or exceeds the Centers for Disease Control and Prevention 1997 guidelines in “*Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*.” For lead poisoning cases of 10 to 20 ug/dL, the ADHS provides prevention counseling to the family by phone and mails educational materials. If the family cannot be contacted by telephone, the program mails educational materials and a certified letter requesting that the family contact the program staff.

The program performs environmental investigations for cases that are moderate to high in severity (≥ 20 ug/dL) and for persistent levels ≥ 15 ug/dL. Environmental investigations consist of an in-home interview, environmental sampling to identify lead sources, and specific intervention information for the family. Some county health departments assist the program with case follow-up. Case management involves contact with the family to ensure proper medical and environmental follow-up. The program provides follow-up information to the case’s physician that is essential to clinical management. This information includes source identification and prevention recommendations.

Registry Data

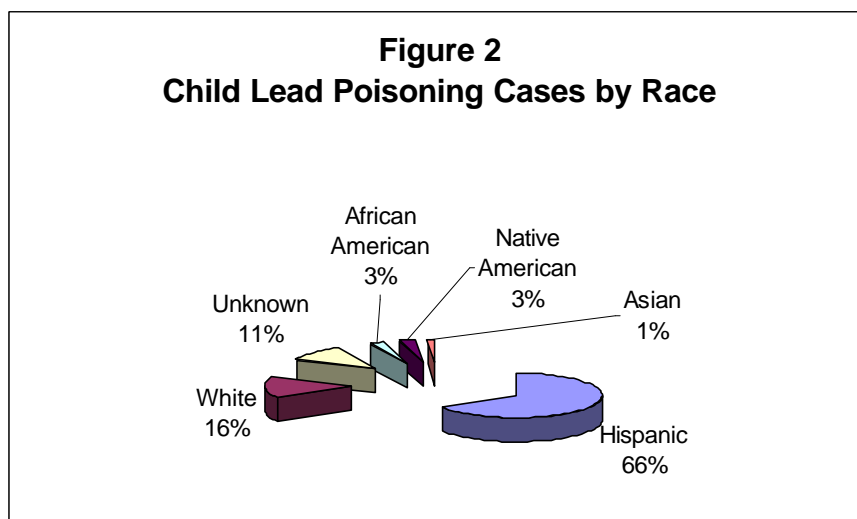
Laboratories and health care providers reported 223 children with lead poisoning (≥ 10 ug/dL) in 2000. Figure 1 displays the number of childhood lead poisoning cases for 1996 to 2000. Seventy-nine percent (79%) of the childhood cases (176 cases) were in the lower ranges of lead poisoning (10 to 20 ug/dL). The remaining 47 cases (21%) were in the moderate to severe range of lead poisoning (≥ 20 ug/dL).



Prevention program staff contacted 90% of the cases' families by phone, mail, or in-person and provided lead poisoning prevention advice and educational materials. Cases that could not be contacted by any means were referred back to the medical provider and to their health plan.

As in previous years, approximately 70% of lead poisoning cases were Hispanic (Figure 2). It is not known whether the disproportionate number of Hispanic cases was the result of socioeconomic factors, sampling bias, a random effect, or some unidentified risk factor. The over-representation of Hispanic children persisted in the group of children reported to have blood levels of ≥ 20 ug/dL.

The program planned a media campaign in 2000 that has been implemented in 2001 to increase public awareness of these important lead sources. The campaign includes radio and television advertisements (with donated air time) and a grass-roots awareness campaign. Approximately \$100,000 of television advertising time were donated to the campaign by Mas! and Cox Cable. A final evaluation of the program effectiveness is expected in August 2001.



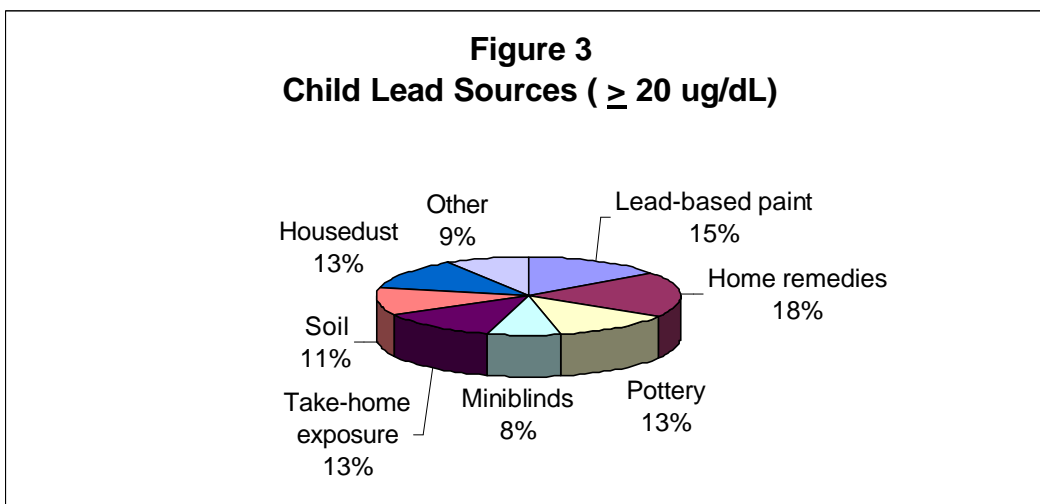
Lead Poisoning Sources

Potential sources of lead exposure were identified during investigations of the child's environment for cases with blood lead levels ≥ 20 ug/dL or with persistent blood levels of ≥ 15 ug/dL. Paint, soil, dust and water samples were routinely taken for laboratory analysis. Other sources investigated included home remedies, hobbies, take-home exposures, toys, and imported pottery.

Lead-based paint and lead-based paint contaminated dust and soil were the most frequently identified lead sources. However, lead-containing home remedies and imported pottery are also important sources of lead exposure in Arizona and have caused the most severe cases of lead poisoning documented in the state. The distribution of major sources of moderate to severe lead poisoning identified in 2000 is illustrated in Figure 3.

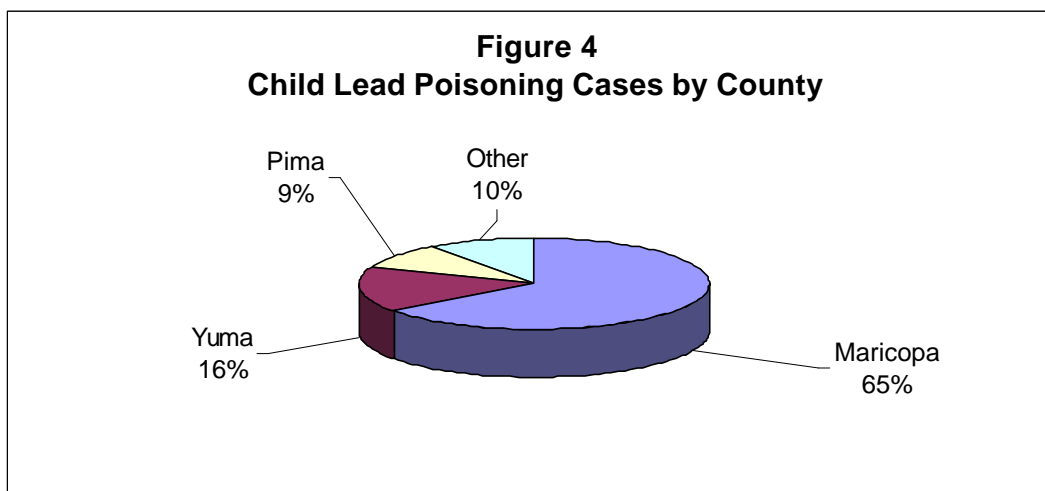
There has been a slow decline in the number of reported cases of childhood lead poisoning over the last several years (Figure 1). However, the number of cases of severe childhood lead poisoning has been

consistent. Lead glazed pottery and home remedies (azarcon & greta) have been identified as a consistent source of the severe lead poisoning cases.



Case Distribution by County

Figure 4 shows the distribution of childhood cases by county. Maricopa, Pima, and Yuma Counties accounted for 90% of all reported cases. The major population centers, specifically Phoenix, Tucson and Yuma, are located within these counties. Apache, Graham, Greenlee, La Paz, Navajo Counties did not have any reported cases.



Higher-risk Zip Codes

Lead poisoning prevalence in Arizona is currently difficult to assess due to a lack of data and limited screening. Newly collected reportable data will be used to establish prevalence rates in the 2001 Annual Report. The best estimate of prevalence rates is based on 1998 Arizona Health Care Cost Containment System data.

Arizona Health Care Cost Containment System providers screened 12,506 children, ages 5 years and younger in 1998. This represents 1.9% of the state population and 11% of the population for this age group. The prevalence rate based on these data was 2.1%. The nationwide average is approximately 4.4%.

An analysis by Zip Code of residence using the 1998 data shows areas of increased risk. Arizona Health Care Cost Containment System screening occurred in 275 Zip Codes, approximately 60% of the Zip Codes in Arizona. Table 1 presents lead poisoning prevalence rates and screening ratios for each Zip Code where more than 100 children were screened. The highest lead poisoning prevalence rates were 8.3% and 7.9% in Phoenix Zip Codes 85006 and 85007. The percentage of all children in these Zip Codes screened ranges from 2.1% to 5.4%. These low screening percentages suggest that caution is warranted in using these data as the only criteria for screening.

Table 1. Arizona Zip Codes with Highest Prevalence Rates of Lead Poisoning for Children Ages 0-5 Years

Zip Code	City	Prevalence Rate (%)
85006	Phoenix	8.3
85007	Phoenix	7.9
85349	San Luis	5.4
85621	Nogales	4.5
85364	Yuma	3.9
85031	Phoenix	3.7
85034	Phoenix	2.8
85607	Douglas	2.7
85281	Tempe	2.6
85009	Phoenix	2.5
85015	Phoenix	2.4
85714	Tucson	2.3

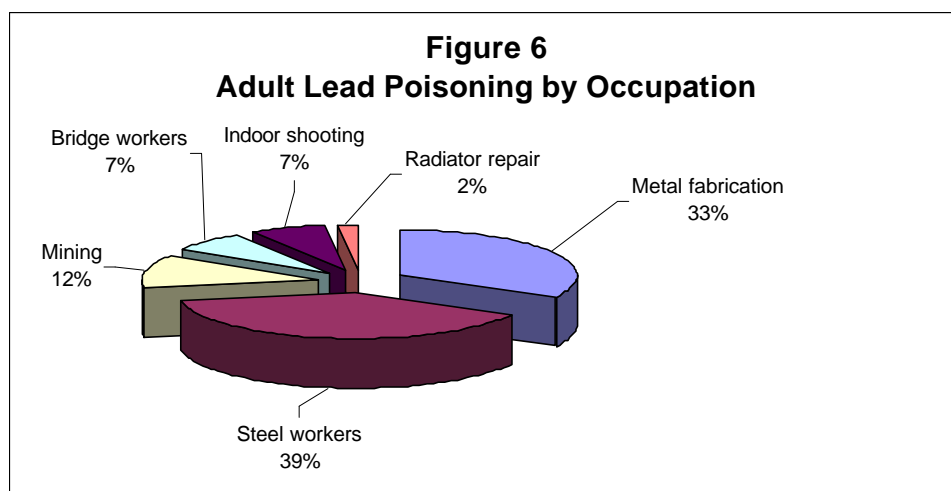
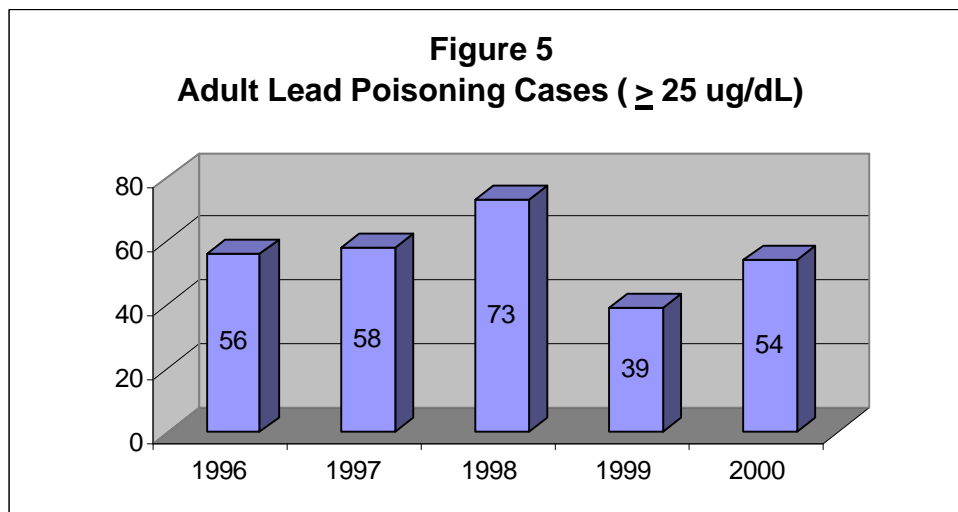
3.0 Adult Lead Poisoning

Laboratories and health care providers reported 247 adult cases with blood lead levels ≥ 10 ug/dL in 2000. Fifty-four (22%) of these cases were ≥ 25 ug/dL, the blood lead level of concern for adults. The 2000 Arizona adult lead poisoning registry data for cases ≥ 25 ug/dL are summarized in Figure 5.

Adult lead poisoning commonly occurs from exposure to lead used in the workplace. High-risk occupations for adult lead exposure include: manufacturing or recycling of batteries, metals, and ammunition; mining and smelting; radiator and automotive repair; soldering and welding; production of

PVC plastic, crystal, ceramics, and glass; remodeling and demolition of older housing and structures; and indoor/outdoor shooting ranges.

The program has identified 110 specific industries with a high risk of lead exposure. Adults also may be exposed to lead in the home through hobbies and through renovation of older homes. Figure 6 displays the sources of adult lead poisoning cases in which occupation was a risk factor in 2000.



4.0 Pesticide Poisoning

The Arizona Department of Health Services Pesticide Poisoning Prevention program administers a pesticide poisoning surveillance and prevention program to identify factors associated with pesticide-related illnesses. The staff maintain the statewide pesticide poisoning registry and address health concerns by providing consultations and informational literature on pesticides and their potential effect on human health.

Health care professionals are required to report pesticide-provoked illnesses to the program. Individuals may also report a pesticide exposure. If a medical evaluation was rendered, the exposed person may

voluntarily sign a Medical Release Information form so that the staff can request medical records pertaining to the pesticide exposure from the attending physician.

Program staff investigate all suspected pesticide poisoning cases and determine if the reported adverse health effects are related to pesticide exposure. Investigations are performed even when the complainant does not complete all forms. The investigation includes gathering information from the exposed person, health providers, and the agencies that regulate pesticides applications including the Arizona Department of Agriculture and the Structural Pest Control Commission. Staff record and analyze the information using a case classification system for acute pesticide-related illnesses and injury cases, as recommended by the National Institute of Occupational Safety and Health.

The program identified a total of 18 definite, probable, and possible pesticide poisonings in 2000 (Figure 7). Overall, the majority of poisonings were from structural pest control applications. The remaining cases were from agricultural and other application events (Figure 8).

Reported exposures may involve exposure to one or more pesticides. The organophosphate pesticides accounted for 60% of the exposure application events and were the most commonly used pesticides. Pyrethroids accounted for 20% of the pesticide illnesses. Organochlorine, chloronicotinyl and a fumigant were responsible for the remaining events (Figure 9).

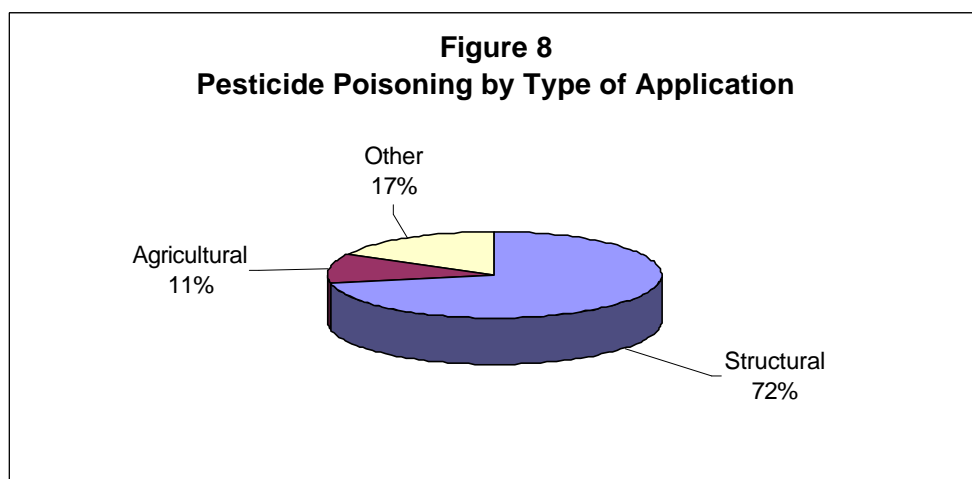
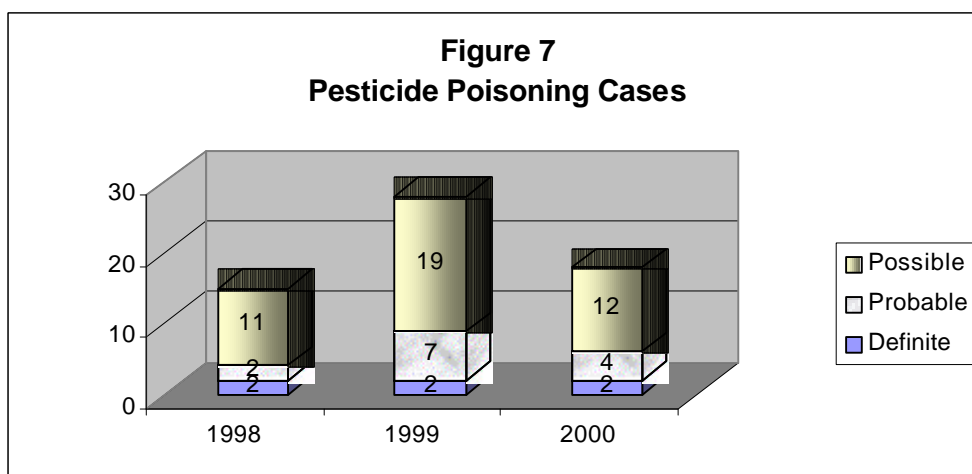
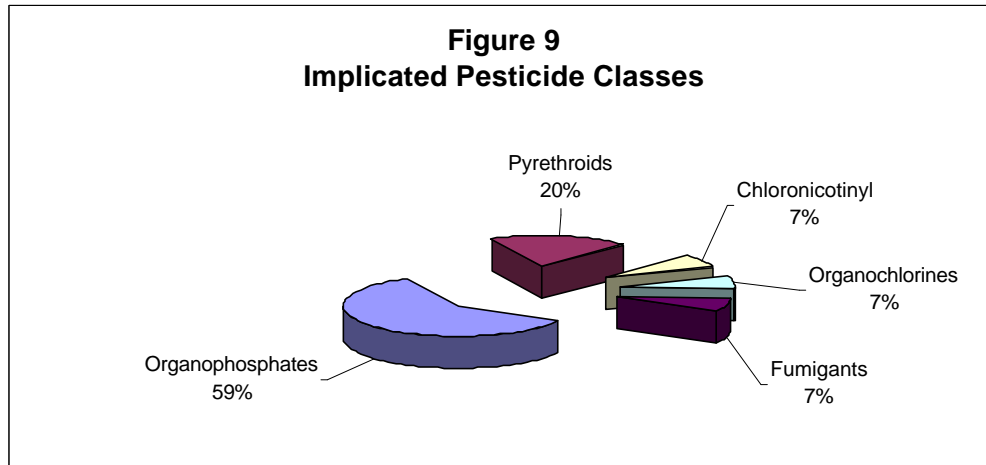


Figure 9
Implicated Pesticide Classes



5.0 Summary

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